# The Overall Problems and Prospects of Prepaid E-Metering System in Bangladesh:A Study on Dhaka City Dwellers

## Jahedul Alam Shuvo

Northern University Bangladesh

Afrin Azhar

Lecturer, Department of Business Administration

Northern University Bangladesh

***Abstract***

*Various attempts have been made to address the inconvenience of non-technical losses of electricity but none of them has proved to be completely successful in Bangladesh so far. Recently, Bangladesh Government has initiated a pre-paid e-metering system which is claimed to be a user-friendly and cost-effective option in this regard. In order to ensure its seamless operations, opinion of its end users is needed to be examined as any investment on new technology will be considered as an ultimate wastage without users’ acceptance. This paper intends to explore the overall problems and prospects of the pre-paid e-metering system installed by DESCO lately in the capital city from the users’ side. In order to do it, depth interview of 47 Dhaka city dwellers, including households and business enterprises located at Mohammadpur, Lalbagh and Hazaribagh area, was conducted. The result reveals that the users have a number of problems regarding it; mostly the unexpected billing system, lack of proper distribution network to make the service more available to users, lack of privacy protection for business users, and others. The study proposes some initiatives which can bring about some visible change if applied properly.*

Keywords: Pre-paid e-metering system, problems, prospects, Dhaka city

* + - 1. **Introduction**

Prepaid e-meter, commonly known as smart meter, is a new technology initiated by Bangladesh Government to provide more user-friendly electricity than before to the people.

Like any other prepaid services, users need to pay the electricity bill before using it. The Bangladesh Government has made the system mandatory for the people as it is expected to provide more benefits than the manual electric metering system. As it is a new system, users are still not accustomed with it and the government is still working to improve it to make it more user-friendly. In this situation, a consumer research can play a vital role by knowing the user opinion to make the system more reliable to its actual and potential users. Hence, the objective of the study is to provide an explanation of the problems faced by the users and some recommendations suggested by the users in detail.

* + - 1. **Literature Review**

a. Prepaid e-Metering System in Bangladesh

The design of prepaid metering system was made by BUET at a worldwide competition hosted by IAS (International Application Society) and was awarded the first prize in 2001. After that, a project named “Pre-payment Metering System Project” has been taken through Bangladesh Power Development Board (BPDB) under which about 2,95,000 prepaid meters along with its related IT and communication equipment are planned to be installed in its six distribution zones by Dhaka Power Distribution Company Ltd. (DPDC), Dhaka Electric Supply Ltd. (DESCO) and Bangladesh Rural Electrification Board (REB) to all over the country (BPDB, 2011).

As the name suggests, in this system, users need to pay first before using the electricity through the government enlisted local vending stations. After recharging, when consumers insert their smart cards into their meters, it reads the card and downloads the amount of electricity bill that has been paid for in the vending station earlier.

The implementation of prepaid meter is expected to help Bangladesh Government to improve its revenue collections and reduce system loss as well. Consumers are expected to be benefitted by taking self-control, saving from their budget and having hassle free billing through this new technology (DOE, 2017).

b. Smart Metering System Scenario Worldwide

This section provides a brief summary of the literature that had been conducted in recent times regarding the identification of the problems and prospects of the smart metering system in other countries. Considering the infrastructural differences, the studies were conducted to explore the overall scenario of the system from users’ perspective.

Chou, Yutmai (2014) have identified the problems of not using smart meter as limited consumer awareness, knowledge, and understanding of devices and therefore proposed a standardized program for households in Indonesia related to smart meters.

Krishnamurti, et al. (2012) found one of the vital problems of smart meter is consumer confusion with in-home display and other enabling technologies used at home. Consumers expect to realize immediate savings while perceiving risk, less control over their electricity usage, violations of their privacy and increase in expenditure related to smart meter for households in United States.

Geelen, Reinders and Keyson (2013) have emphasized on the fact that the residential endusers should play more like an active co-provider of the smart grid service, not just a passive consumer of it. It has been observed that the products and services are often being focused more on its technical functionality and financial incentives but the behavioral aspects and social context should be taken into account too. At the same time, they proposed the notion that the design recommendations could be proposed to empower end-users for becoming a part of the service production and distribution.

**3. Methodology of the Study**

a. Type of Research

This study is actually a qualitative and exploratory research in nature as the aim of the study is to explore the problems and prospects of the recently launched utility service of Bangladesh Government – the prepaid e-metering system. As the service is still a quite new concept in Bangladesh and yet to be widespread all over the country, the number of user is very few and concentrated in certain areas only.

b. Data Collection and Sampling

The data has been collected from three areas of Dhaka city through conducting depth interviews of the users. Each interview took approximately 30-35 minutes on an average. Mostly the interviews were conducted by following direct approach but in some cases the interviewer had to hide the true purpose of the research and talked disguised to get the best possible responses from the interviewees. All the interviewees were selected conveniently and sometimes taking the references of initial respondents. However, the study is mainly based on primary data collected from its users.

1. **Data Analysis and Findings**

a. Respondent Profile

In order to conduct the study, a total 47 users were interviewed among whom both the household users and small business enterprises were considered. The following table 1 and 2 provide a snapshot of the overall profile of the respondents:

**Table 1: Geographic Profile of the Respondents**

|  |  |
| --- | --- |
| **Area**  | **No. of Respondents (n=47)**  |
| **Household**  | **Small Business**  | **Total**  |
| **Landlord**  | **Tenant**  |
| Lalbagh  | 04  | 21  | 04  | 29  |
| Hazaribagh  | 00  | 09  | 00  | 09  |
| Mohammadpur  | 00  | 08  | 01  | 09  |

**Table 2: Demographic Profile of the Respondents**

| **Gender**  | **%**  | **Age** **(Years)**  | **%**  | **Occupation**  | **%**  | **Education**  | **%**  | **Income** **(Thousand)**  | **%**  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Male  | 51  | Below 30  | 40.4  | Govt. service  | 7.1  | Below undergrad  | 36.2  | Below 50  | 12.8  |
| Female  | 49  | 31-39  | 29.8  | Private service  | 28.6  | Bachelors  | 29.8  | 50-60  | 4.3  |
|   |   | 40-49  | 19.1  | Self-employed/ Business  | 16.6  | Masters  | 29.8  | 60-70  | 14.9  |
| 50-59  | 8.5  | Others  | 47.6  | PhD  | 4.3  | 70-80  | 25.5  |
| 60+  | 2.1  |   |   |   |   | 80-90  | 19.1  |
|   |   | 90-100  | 12.8  |
| 100-150  | 4.3  |
| 150-200  | 4.3  |
| 200+  | 2.1  |

b. Percentage Analysis of the Problems Identified by the Respondents

As per the interview, the following problems have been identified. These problems have been shown in percentage terms in table 3.

**Table 3: Problems Identified by the Respondents**

| **Sl. no.** | **Problems** | **Percentage** |
| --- | --- | --- |
| 1.  | Billing  | 21  |
| 2.  | Excessive VAT  | 59  |
| 3.  | Long waiting time to recharge  | 80  |
| 4.  | Certain recharge limit  | 29  |
| 5.  | Uncertainty about billing  | 57  |
| 6.  | Deduction of excessive bill  | 14  |
| 7.  | Privacy concern in information sharing for business enterprises  | 10  |

Considering the benefits of its usage, the smart meter technology is still not making the life of the people easier. There has to be a visible improvement in the distribution side. Apart from its uncertainty and less transparency, the system is still not a user-friendly option for mass people. However, lack of ease may lead to lack of reliability and credibility of the service which may hamper the overall objective of the Bangladesh Power Development Board (BPDB), Dhaka Power Distribution Company Ltd. (DPDC), and Dhaka Electric Supply Company Ltd. (DESCO).

1. **Practical Implications**

According to the responses mentioned at the previous section, the prepaid e-metering system would be proved to be a better utility service of Bangladesh Government than ever before if the following actions are taken:

* Reducing billings problems by making the billing system more transparent to its users as some users complained about sudden loss of recharged credit balance
* Reducing excessive VAT on it
* Increasing the availability of smart card recharging points by increasing the number of vendors in every local area
* Increasing the recharging limit for smart prepaid card
* Incorporating other services with smart card – such as mobile wallet (bKash, rocket, etc.) for recharging; mobile telecommunication services (grameen phone, Banglalink, etc.) to become aware about the overall usage status- such as- balance enquiry, alarm SMS for low balance and for other information sharing services
* Incorporating more bank and ATM services as vendors
* Business users showed a privacy concern as the electricity bill has become more transparent to public than before which sometimes create chaotic and unavoidable situations with the local cadres. Therefore, they have urged for making the billing system more privacy protected.
1. **Scope and Limitations of the Study**

This study can significantly contribute to the future research works yet to be done in the context of examining users’ intention to use or adopt this new technological utility service and can be further used to analyze the problems and prospects of any other future utility services at their introduction period. However, the result of this study would be more generalizable if it would have considered more of its users located in the other parts of Dhaka city also. Due to time and resource limitations, this study has focused in certain areas only.

1. **Conclusion**

According to the study, the users are facing troubles at the time of using it although it has been made compulsory for the people. Therefore, some immediate and visible improvements mentioned at the practical implication section are required in order to present the service in a more reliable way to the people. However, the positive thing is, with all the imperfections, people have accepted it and showed interest to get other utility services; such as- smart gas and smart water; in prepaid form.

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